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GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

Presentation of the Cullum Geographical Medal to Emmanuel de Margerie.

The presentation to Emmanuel de Margerie of the Cullum Geographical Medal, whose award to this eminent French geographer by the American Geographical Society was announced in the *April Review* (p. 262), took place at the United States Embassy in Paris on May 27. The presentation was made by Ambassador Hugh Campbell Wallace. In addition to members of M. de Margerie's family there were present representatives of various learned institutions of Paris as well as members of the American commissions at the time in the French capital, including Dr. Sidney E. Mezes and Professor Mark Jefferson of the American Commission to Negotiate Peace and Major D. W. Johnson.

In presenting the medal Ambassador Wallace made the following remarks:

"Ladies, Monsieur de Margerie, and Gentlemen: I have the honor to be requested by the Council of the American Geographical Society, and the very great pleasure, to be its representative in presenting the Cullum Gold Medal of the Society to M. Emmanuel de Margerie of Paris for his most conspicuous services to the science of geography. The international reputation of M. de Margerie makes unnecessary and superfluous any words of mine concerning his earnest and successful effort. No geographer or geologist in France has given so much assistance to the American Expeditionary Forces, and his co-operation with the Geographical Section of the Army will not be forgotten by any who have come in contact with it.

"Sir: It is with sincere appreciation of the privilege I enjoy in representing the American Geographical Society in such an entirely justified and pleasing recognition of your work that I beg you to accept this medal."

The Ambassador thereupon presented the medal, the inscription on which reads as follows:

TO EMMANUEL DE MARGERIE
FOR "LA FACE DE LA TERRE"
DISTINGUISHED FOR PROFOUND SCHOLARSHIP
AND THE RARE GRACE OF A MODEST SPIRIT

In accepting the medal M. de Margerie spoke as follows, graciously couching his remarks first in French and then in English, which he commands with perfect ease:

"Monsieur l'Ambassadeur: Aucun honneur ne saurait être plus agréable à un géographe français, en ce moment de l'histoire du monde, que d'être choisi comme lauréat par la grande Société de Géographie dont le siège est à New York.

"En m'attribuant l'une de ses deux médailles d'or, cette puissante association vient consacrer officiellement les liens d'échange intellectuel et d'affectueuse sympathie qui m'unissent, depuis bien des années, à de nombreux représentants de la science américaine.

"Qu'elle soit remerciée, par votre bouche, de cet acte généreux, dont les maîtres et les amis qui m'écoutent sentent certainement, comme moi, tout le prix, car, à travers ma modeste personne, c'est à mon pays que va ce témoignage si flatteur!

"En parcourant la liste des titulaires de la médaille Cullum, je suis particulièrement heureux d'y relever le nom d'un de mes compatriotes, le Dr. J. B. Charcot, et celui du plus éminent des géographes vivants des Etats-Unis, l'infatigable professeur W. M. Davis, dont tous, à des degrés divers, nous sommes les élèves.

"Mais je crains qu'une bienveillance excessive n'ait dicté à la Société sa décision, quand je vois pour me précéder tant d'hommes illustres, les Moreno, les Nansen, les Scott, les Shackleton, les Peary, et plusieurs autres, dont l'existence tout entière n'a eu qu'un but: faire disparaître de la carte du globe les taches blanches qui subsistaient avant leurs travaux.

"En effet, si les circonstances m'ont permis de fréquents voyages à l'étranger, je n'ai jamais parcouru que des routes très banales, et il n'y a pas un seul kilomètre d'itinéraires nouveaux qui puisse être versé au dossier de l'exploration en mon nom.

"C'est donc à un autre aspect des études géographiques que s'adresse l'insigne marque d'encouragement dont je suis, aujourd'hui, le bénéficiaire. C'est, si je ne me trompe, à la critique des idées et des faits, à la diffusion des résultats acquis, à l'élaboration des principes et des méthodes.

“Sans m'étendre sur la portée de cet effort, vous me permettrez d'insister sur le constant appui que j'ai trouvé, depuis près de quarante ans, auprès des savants américains et des institutions scientifiques qui font la gloire des Etats-Unis.

“Ever since the days of my boyhood the work of the scientific pioneers in the West has exerted on my thoughts and feelings a fascination of its own. It was my privilege, in 1891, to meet personally some of these great men: Dana, Whitney, Clarence King, Major Powell, Gilbert, Holmes, and several of their associates, and to receive, as it were, inspiration from their active genius. When, twenty-one years later, I had the honor to give an address, in English, to the members of the American Geographical Society assembled in New York, there could not remain any doubt in my mind as to the subject I was to choose: ‘The Debt of Geographical Science to American Explorers.’ If I have contributed to make better known some of their achievements among French geographers and geologists, that is a mere trifle in comparison with the benefit I have found myself in the perusal of their work.

“During the last three years I had more than once the pleasure of receiving the visit of friends from the other side of the ocean, most of them members of the Society, but not always identified at once under the military dress of the time. The very meager help I could give them in matters connected with their official duty gave me an occasion to see something of what ‘American efficiency’ could be, in those heroic days.

“I shall never forget the enthusiasm and unselfishness of these gallant men. Major Johnson, whom I am glad to see in this audience, can take for himself a good part of that compliment. Let me name also my friend Dr. Isaiah Bowman, whose departure from Paris, a short while ago, remains a source of deep regret to me—as he is responsible, I believe, for the delicate and most charming words engraved on the medal which I am receiving from the hands of Your Excellency.

“And now, Mr. Ambassador, let me add a few words to convey to yourself the expression of my deep personal feelings of gratitude and to excuse myself for having encroached upon your time in a moment when the hours are, perhaps, more heavy for responsible men than has ever been the case before.

“Vive la science américaine! Vive les Etats-Unis!”

NORTH AMERICA

The Deepest Well in the World: A New Record. Until very recently the two deepest borings into the crust of the earth were a well near McDonald, Pa., 14 miles west of Pittsburg, which measured 7,248 feet, and one at Czuchow in Upper Silesia, Germany, where a depth of 7,349 feet had been reached. These marks have now been passed by a well sunk near Clarksburg, in the northern part of West Virginia, in a futile attempt to reach the rich gas-bearing and petroliferous “Clinton” (Medina) sand, which extends across eastern Ohio and is thought to underlie this region. A final depth of 7,386 feet was reached. The failure to reach the oil and gas horizon was due to the unexpected thickening of the Devonian shales, one of the overlying series, and to the parting of the cable 2,000 feet above the bottom when this depth had been reached (“Discussion of the Records of Some Very Deep Wells in the Appalachian Oil Fields of Pennsylvania, Ohio, and West Virginia,” by I. C. White, with temperature measurements by C. E. Van Orstrand: introduction to D. B. Reger: Barbour and Upshur Counties and Western Portion of Randolph County, *West Virginia Geol. Survey County Repts.*, 1918, pp. xxv-ciii).

Interesting data regarding the rate of increase in underground temperature have been yielded by the operation and by similar borings in the same field. It was found that at a depth of 7,000 feet the temperature had risen to 172° F. and that the rate of increase at that depth was about 1° F. in 51 feet. Mr. Van Orstrand estimates that the boiling point would be reached at somewhere near 10,000 feet below the surface. The rate of temperature increase (1° F. for each 51 feet of descent) is about the average ascertained by the Committee on Underground Temperatures of the British Association for the Advancement of Science (e.g. *Rept. for 1889*, pp. 35-40; *1895*, pp. 75-77; *1901*, pp. 64-71; *1904*, pp. 51-55), though the rate is far from uniform, varying from 1° F. in less than 20 feet to 1° F. in 130 feet. In this portion of the Appalachian district there has been little movement of the strata since their deposition, hence the temperatures recorded are of peculiar interest. For data regarding temperatures recorded in earlier borings in the same region see W. Hallock: *Subterranean Temperatures at Wheeling, W. Va., and Pittsburgh, Pa., School of Mines Quarterly*, Vol. 18, 1897, pp. 148-154.

The Vegetation of the Dry Tortugas. Among the “Papers from the Department of Marine Biology of the Carnegie Institution of Washington” in Vol. 12, 1918,

is one (pp. 111-138) of peculiar geographical interest on the "Botanical Ecology of the Dry Tortugas," by H. H. M. Bowman. It will be remembered that on one of these small islands, which lie 70 miles west of Key West, the Carnegie Institution maintains its Marine Biology Laboratory, established in 1904. These islets, ten in all, are of coral formation and have grown roughly crescent-shaped through the action of wind-formed currents, the Florida countercurrent, and the movement of tides. They rise only slightly above the surface of the water and vary little in either climate or soil. Except the general survey of the vegetation of the entire Florida Keys conducted by E. O. Lansing in 1904, the results of which were published in 1907 by C. F. Millspaugh (*Flora of the Sand Keys of Florida, Field Columbian Museum Publ. 118: Bot. Ser. 2, No. 5*), no other recent study of the vegetation of these islands has been made.

The flora of the Dry Tortugas is strikingly different from that of the keys farther east, partly because of their isolation, partly because of the character of the soil. The mangrove, a characteristic form in the other islets, is almost entirely lacking in the Tortugas, where both soil and air are too dry to favor its growth. All plants of the islands may be classified as strand flora. They owe their origin to the adjacent West Indies, from which they have probably been carried by the currents referred to. Contrary to the opinion expressed by Millspaugh, the author finds that birds have had little influence in the distribution of plant life. Though the Tortugas have been a United States Bird Reservation since 1908 and though they are densely populated with terns during the breeding season, the food upon which these birds subsist is chiefly fish, and they seem to have affected plant life only to a small extent.

As the islands possess no springs and as the soil is so porous that it retains little moisture nearly all plants show some special adaptation to guard against the loss of water.

The Associated Mountaineering Clubs of North America. The organization known as the Associated Mountaineering Clubs of North America was founded in 1916 with nine clubs and societies; there are now twenty-nine, with an individual membership of over 45,000. In addition to the leading mountaineering and outdoor clubs of the continent, the association includes some societies whose activities are of a somewhat different character. Uniting them all, however, there is the common bond of interest in the preservation of our finest scenery and in the protection of tree, plant, flower, bird, and animal life in its natural environment.

The association is working in co-operation with the National Park Service for the creation and development of our National Parks and Monuments. First in the hearts of all true mountaineers and travelers is the preservation of our most beautiful scenery from commercial ruin. In the annual *Bulletin* of the association attention is called to the activities of the various departments of the Government of value to the mountaineer and traveler. The claims of various regions to become National Parks and Monuments and the proposed enlargements of existing parks are presented. As these projects come up for governmental consideration the association presents the views of its members and also gives wide publicity to the plans of the Government.

The association acts as a clearing house for interchange of information on mountaineering and on National Parks and Monuments. Its *Bulletin* contains information as to the officers, number of members, dues, publications, outings, and other matters of interest, of the organizations belonging to the association. A large collection of literature has been formed, by combining, in the building of the New York Public Library, the books of the American Alpine Club and the mountaineering books in the New York Public Library, and bibliographies are being compiled and published. A collection of mountain photographs has been gathered to supplement the literature of various regions. Many mountaineering and outdoor books have been secured free of charge for the libraries of the members of the association. Public attention has been called to many important but little-known scenic regions by illustrated articles in leading periodicals and by illustrated lectures which have been given before many leading clubs and societies.

LE ROY JEFFERS

AUSTRALASIA AND OCEANIA

Hawaiian Climate and White Residents. Though it is a generally accepted idea that prolonged residence within the tropics impairs the vitality of the white race, Professor Vaughan MacCaughy, in an article contributed to *Science* (Jan. 10, 1919, pp. 44-46), maintains that there is little ill effect experienced in the Hawaiian Islands. Americans, even those families who have lived there for several generations, seem to retain the same vigor and energy as people in the "States." Business hours, length of working day, holidays, and vacations follow the customs of the continental United States. School children and college students appear capable of doing work equal in amount and quality to that accomplished in the temperate zone. Though white labor

does not now exist on the islands, yet in earlier days, before the advent of Oriental workmen, white men worked in the fields with no apparent ill effect. In energy, leadership, and intellectual activity the resident whites have suffered little, if any, deterioration.

Professor MacCaughey accounts for this by supposing that the oceanic influence, intensified by the presence of cool currents and strongly developed trade winds, which render the climate more truly temperate than tropical, counteracts any deleterious effect which life within the torrid zone might otherwise have. This contention is upheld by Dr. Titus M. Coan in his paper "The Climate of Hawaii," published in Cohen's "System of Physiologic Therapeutics" (Vol. 4, pp. 223-241, Philadelphia, 1901). It serves as an excellent illustration of the fact that the true boundaries of zones are isothermal rather than latitudinal: that even within the tropics climatic conditions are often far from "tropical."

The Rainfall of Honolulu. In a recent paper on the cumulus clouds which form in the trade winds over the Koolau Mountains on the island of Oahu, Andrew M. Hamrick calls attention to the striking differences in the rainfall amounts within short distances on that island (*Monthly Weather Rev.*, Sept., 1918). If Oahu were a low, level island, it would be a desert. By a fortunate arrangement of the topography the Koolau Mountains lie at right angles to the trade winds and are of sufficient height to cause not only the huge cloud cap which is so striking a characteristic of the region but also a very considerable rainfall. In the business district of Honolulu, which is about 5 miles from the crest of the mountains and to leeward of them, the mean annual rainfall is about 25 inches. Three miles northeast of the city, about halfway to the summit of the mountains, it is 100 inches. The cloud, which hangs with remarkable steadiness over the mountains, is sometimes blown far enough to leeward to give rain in Honolulu, though the sun is shining brightly over that city. These showers are locally termed "liquid sunshine." The moisture from the cloud cap favors the growth of dense vegetation on the mountains. Similar conditions are found on the other large islands of the group. Sufficient water is collected from the clouds to supply the irrigation ditches upon which most of the agriculture of the Hawaiian Islands depends.

R. DEC. WARD

OCEANS

The Meteorological Aspects of the Recent Transatlantic Flights. With transatlantic flight actually accomplished, the problem of intercontinental air voyages has apparently resolved itself into a question of selecting lines of travel where meteorological factors are favorable or of waiting for suitable weather conditions along a desired route. Machines are able to carry the required fuel, and aviators have proved themselves capable of the protracted strain involved. It will always be necessary, however, carefully to select the routes and the times that offer favorable meteorological conditions. This will be the case whether outlying points, such as St. John's and Trepassey Bay, be used for transoceanic air-service ports or whether, with the experience now being gained, it be possible to make the start from the great ports already developed as termini of steamer routes. A thorough consideration of meteorological conditions is requisite not only for the safety of machines and passengers but also because speed and the consequent cost in time and fuel for each voyage depend upon the force and the direction of wind and other favorable atmospheric conditions.

The *Monthly Weather Review* for February, 1919 (pp. 65-75), contains a discussion of "Trans-Atlantic Flight From the Meteorologist's Point of View" by W. R. Gregg, one of the meteorological experts actively concerned with the flight of the U. S. Navy planes. Though the subject is considered in relation to the then still unaccomplished first flight, the conclusions reached apply in a general way to succeeding voyages. Two routes only are considered of great present importance for the flight from North America to Europe; those taken respectively by the English and the American aviators in the journeys recently made. Though the route from Newfoundland to the Azores was considered most practicable for an initial venture because of the shorter distances to be covered in the individual "hops," that from Newfoundland to Ireland is found to offer more suitable days in the year for the eastward flight. A careful comparison of meteorological conditions as revealed in the daily marine synoptic weather maps for the years 1906-1915, inclusive, showed that the northern route offers 127 days per year and the southern route 101 days per year favorable for the eastward voyage. For a return the southern route offers but 35 days annually and the northern route even less, containing on an average only 17 suitable days. However, all estimates of weather conditions high above the Atlantic are based chiefly upon free-air observations made in the eastern United States and western Europe, combined with our knowledge of

surface conditions on the ocean, since few actual observations have been made in the upper air over the sea.

In flying over the ocean, at an elevation of from 500 to 1,000 meters, the temperature is likely to be quite constant throughout the year. In the upper air, as on the surface of the sea, there are not such extremes as on the land. Even during winter it is thought that the temperature at 1,000 meters above the sea seldom falls much below freezing, while throughout other seasons the temperature must be milder still and, of course, never high enough to cause discomfort from heat.

The meteorological conditions of greatest interest in transatlantic flying are wind (velocity and direction) and cloudiness (including fog). The experience of the American and British aviators in their transoceanic flying reveals the fact that the latter factor is of supreme importance. Fog and cloud are considered in Gregg's paper as of relatively slight import and are thought to affect only the matter of locating the landing place. This would seem to be the case, too, in the "Report of the British Civil Aerial Transport Committee" (London, 1918), since this treatise also discusses fog chiefly in relation to the difficulty in landing (see the note on this report in the *Monthly Weather Rev.*, Feb., 1919, p. 80). But practical aviators have encountered the difficulty of steering in clouds, finding it extremely hard to recognize either horizontal or vertical directions, if the compass card becomes unsteady, as often happens. Even the bubble is of little assistance, as centrifugal force counteracts gravity (see "Danger in Flying Through Clouds", abstract of a paper read before the Aeronautical Society of Great Britain by Captain B. C. Hicks, *Scientific American Suppl.*, June 15, 1918, p. 375). In fact the greatest difficulty encountered by the American naval airmen Towers and Read in their flight to the Azores on May 16 was the impossibility of navigating at high speed and yet keeping true to the course when enveloping clouds made the horizon line difficult to determine. The use of an artificial horizon by which it was thought this danger might be overcome has not proved entirely practicable. When the bubble becomes unreliable an aviator must get his bearings not on a circle but on a sphere, since he may be traveling toward any point of the compass, and upward or downward at any angle without being able to know what position his machine is taking relative to the cardinal points or the ground. In fact, he has six cardinal points instead of four, with danger close at hand in at least one direction. Yet he must keep moving at a high speed; so he must know, and know quickly, in which direction to bear. The British in their successful non-stop flight on June 14-15 experienced these difficulties, finding cloud and fog along a great part of their way. Yet occasional glimpses of the water enabled them to calculate their speed and drift and so to steer true to their course. In the first part of the journey icebergs, whose color stood out clearly against the dull drab of the ocean, were found to be of service in making these reckonings.

In regard to winds, the aviator, while far from being absolutely dependent upon them, will always be greatly helped or hindered by their force and direction. As is now well known the movements in the upper air are more constant and usually stronger than the surface winds. Above 500 to 1,000 meters the prevailing westerlies of temperate latitudes can be depended upon. But up to this height the aviator must take into account surface currents, less irregular, of course, over the ocean than over the land, and less variable, because cyclonic centers at sea lose much of their intensity. Over the North Atlantic these surface currents, changing with the passing of extra-tropical cyclones, tend to flow parallel to the isobars. Consequently an aviator finds favorable wind conditions when the isobars lie parallel to the course he wishes to follow. This happens for the southern route, viz. from Newfoundland to Portugal, when a center of high pressure lies about latitude 30° to 40° N., central in the region of Bermuda, with crest extending eastward, and when a low is situated some 1,000 kilometers east of Newfoundland in about 50° N.

This is the combination apparently sought by the American naval aviators for their venture, and the measure of success attending that initial flight was largely due to the Weather Bureau's forecast of this favorable combination. A center of low pressure, which had moved slowly out of the Gulf of St. Lawrence, had passed northeastward to approximately the position above mentioned, while an area of high pressure had crossed behind this low center, had moved east by south, and apparently was located near Bermuda on May 16, when the seaplanes started. This would result in south-eastward winds most of the way to the Azores and eastward winds from there to Portugal. The British flyers Hawker and Grieve, awaiting favorable conditions for their flight northeastward to Ireland on May 18, had to wait until the low center had passed farther northeast and until the winds accompanying it were blowing in that direction over at least a part of the northern course. In their natural ambition to reach Europe first, they seem to have started somewhat too soon and to have run into local storms that were developed on the southernmost extension of this low barometric

center. A delay of another 12 hours would probably have given them better weather conditions. In the later successful flight made by the British aviators Alcock and Brown over the northern route on June 14-15, an extensive area of high pressure, which had dominated meteorological conditions off the Newfoundland coast for several preceding days, gave them strong westerly winds over the entire course, enabling them to attain an average speed of over 120 miles an hour.

In conclusion it would seem that two requirements must be met for successful trans-oceanic travel: first, more accurate forecasting of meteorological conditions in mid-ocean, since all fliers have reported unexpected weather. This can be accomplished only with more complete knowledge of surface and upper-air conditions over the sea, secured perhaps, as Commander Read has suggested, by means of a line of permanently posted ships which will serve as ocean meteorological stations; perhaps by some such system as that being instituted by the British Admiralty, whereby ships passing certain specified points on the high seas at predetermined hours shall report their observations by wireless to central stations, which in turn will issue frequent forecasts covering practically the entire ocean (see the following note). To the greater acquaintance with free-air conditions at sea aviators themselves will no doubt contribute largely. The second requirement is improved means of navigating when the horizon is invisible. The flights recently made demonstrate that until some feasible appliance for this purpose is devised aviators will run the risk not only of delay, or of being driven far out of their course, but also of being lost at sea, through inability to get correct bearings.

Ocean Weather Reports and Forecasts for Aviators. According to *Symons's Meteorological Magazine* for May, 1919 (p. 37), it is announced that the British Admiralty, through the Meteorological Office, is establishing a system by which weather conditions will be reported by wireless three times a day from ships in all parts of the world. In return, wireless bulletins will be issued from 42 widely separated transmission stations, either giving an official statement of existing conditions or forecasting the weather for particular regions. Co-operation on the part of the other nations will be sought, perhaps to the extent of obtaining international "silent periods" for the hours 1 A. M., 7 A. M., and 1 P. M. (mean Greenwich time) when signals are being sent, in order thus to facilitate the operation of the system. In the northeastern Atlantic six or seven points are being fixed, and ships in the vicinity of these points at the indicated hours will be asked to furnish reports. This work will become of greatly increased value with the development of the intercontinental air voyages now expected. Aviators, on their part, will also probably contribute reports of upper-air conditions. The successful operation of such a plan should add vastly to our present meager knowledge of ocean meteorology.

GEOGRAPHICAL NEWS

The Centennial Number of the *American Journal of Science*. The July, 1918, issue of the *American Journal of Science* is a Centennial Number, in celebration of the hundredth anniversary of the founding of this publication. The papers of particular interest for geographers are the three under the general title "A Century of Geology" and that on "A Century of Government Geological Surveys." This last is by George Otis Smith, Director of the U. S. Geological Survey. The other three are "Historical Geology," by Charles Schuchert; "Steps of Progress in the Interpretation of Land Forms," by Herbert E. Gregory; and "The Growth of Knowledge of Earth Structure," by Joseph Barrell. Each paper traces the development of its respective branch during the last one hundred years, giving particular, but not exclusive, attention to American science. A special volume, reproducing this number of the *Journal*, with important additions, is being prepared for publication by the Yale University Press. This series of papers forms a valuable record of the achievement in the field of geology during what is practically the first century of American science.

Resumption of Publication of *Le Mouvement Géographique*. This weekly periodical, founded in 1884 by the late A. J. Wauters (who died in Brussels on March 25, 1916), has resumed publication after four years of enforced silence, beginning with the issue for January 5, 1919 (Vol. 32, No. 1). It continues its original policy of contributing toward the popularization of geography, giving especial attention to Belgian interests and operations in the Congo. Among other important articles contained in recent numbers are: "L'état actuel des passes du bas Congo" (March 9) and "L'histoire économique du Congo depuis 1914" (May 4), the latter being an address delivered in the Institut Solvay by J. Geerinx.